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### **FTIR Evaluation of Microscopic Scarring in the Cardiomyopathic Heart**

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Beamline(s): U10B

**Introduction:** Abnormal rearrangement or remodeling of the cardiac extracellular matrix is known to contribute to cardiac dysfunction. Synchrotron FTIR Spectromicroscopy at NSLS has been used to evaluate focal collagen deposition in control and cardiomyopathic hamster heart. This has been part of an on-going study at NSLS U10B, concluded in 2001.

**Methods and Materials:** Heart tissue was excised from control and cardiomyopathic hamsters, sacrificed at 65 and 200 days, and frozen. Thin sections were mounted on reflective slides for spectroscopic analysis. Serial tissue slices were stained and examined for lesions. Individual spectra and area maps were acquired with the Continuum microscope on the Nicolet 860 spectrometer at U10B. Spectral analysis for focal collagen was achieved through analyzing data for the well-known collagen spectral fingerprint.

**Results:** The synchrotron IR spectromicroscopy proved to be an excellent technique for the evaluation of the presence and localization of collagen in these tissues. Results have been presented at several conferences; a manuscript has been submitted for publication and will be included in next years list of publications.

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Image at right shows presence of focal collagen (blue) in cardiomyopathic hamster heart.

Image was created with Omnic/Atlas software for the Nicolet spectrometer and Continuum microscope, at the U10B Beamline.

